

REMARKS

This responds to the Office Action mailed on September 8, 2006, and the references cited therewith. Reconsideration is respectfully requested.

Claims 1, 5, 7 – 9, 12 – 13, 16 – 17, 20, 24, 26 – 27 and 29 are amended, claims 30 – 36 are canceled, and no claims are added; as a result, 1 – 29 claims are now pending in this application.

Claim Objections

Claims 5 and 16-17 were objected for the following minor informalities which have been corrected by way of this amendment.

In regard to Claim 5, the phrase “repeating the filling and the purging” has been replaced with “repeating the filling and the evacuating” in accordance with the Examiner’s suggestion.

In regard to claims 16 and 17, the word “valves” was misspelled and has been corrected with the word “values”.

Allowable Subject Matter

Claims 7-10, 12, 20, 24, 26-27 and 29 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7, 8 and 9 have been rewritten in independent form including the limitations of base claim 1 and intervening claims 3, 5 and 6. Claims 7, 8 and 9 are therefore believed to be allowable. Claim 10 is believed to be allowable at least because of its dependency on claim 9.

Claim 12 has been rewritten in independent form including the limitations of base claim 1 and is therefore believed to be allowable.

Claim 20 has been rewritten in independent form including the limitations of base claim 13 and intervening claim 14. Claim 20 is therefore believed to be allowable. Claims 26 and 27 are believed to be allowable at least because of their dependency on claim 20.

Claim 24 has been rewritten in independent form including the limitations of base claim 13 and is therefore believed to be allowable.

Claim 29 has been rewritten in independent form including the limitations of base claim 13 and intervening claim 28 and is therefore believed to be allowable.

§102 Rejection of the Claims

Claims 1-6, 13-14, 16-19 and 25 were rejected under 35 U.S.C. § 102(b) as being anticipated by Lessard et al. (U.S. 5,862,671).

Applicants' claim 1 is directed to generating a high-level vacuum. As recited in claim 1, a chamber having a substantially-pure gas therein is evacuated, and residual gas in the chamber is frozen to generate a high-level vacuum within the chamber. Applicants' claim 13 is directed to a vacuum insulation system. The system comprises a chamber having a substantially-pure gas therein at less than atmospheric pressure, and a cooling element to freeze residual gas in the chamber to generate a high-level vacuum within the chamber. Claims 1 and 13 further state that the chamber has essentially no other gasses therein other than the substantially-pure gas.

According to the Examiner, Lessard teaches 'freezing residual gas in the chamber to generate a high-level vacuum in the chamber' in Lessard column 1, lines 23-32. Applicants respectfully disagree with this and submit that at column 1, lines 23-32 of Lessard read as follows:

"In operation, high boiling point gases such as water vapor are condensed on the frontal array. Lower boiling point gases pass through that array and into the volume within the radiation shield and condense on the lower temperature array. A surface coated with an adsorbent such as charcoal or a molecular sieve operating at or below the temperature of the colder array may also be provided in this volume to remove the very low boiling point gases such as hydrogen. With the gases thus condensed and/or adsorbed onto the pumping surfaces, a vacuum is created in the work chamber."

As can be seen, there is no mention of freezing a residual gas. Applicants submit that Lessard does not teach, suggest or motivate the freezing of residual gas in a chamber to generate a vacuum and furthermore submit that Lessard *teaches away* from freezing any sort of gas,

particularly water vapor. Lessard states that "Any freezing of material in the system greatly increases the regeneration time. Water vapor, for example, will freeze at about 5 Torr at room temperature. Accordingly, an average pressure in the range of 10 to 30 Torr, with the actual pressure never dropping below about 8 Torr, is preferred" (see Lessard column 7, lines 1 – 6).

According to the Examiner, the mention by Lessard of ensuring that no freezing of any species in the chamber is germane only to the purge process. Applicants disagree with this interpretation of Lessard because Lessard makes it clear that "*Any freezing*" is problematic and therefore "an average pressure in the range of 10 to 30 Torr, with the actual pressure never dropping below about 8 Torr, is preferred".

Furthermore, there is no teaching, suggestion or motivation in Lessard that a "high-level vacuum is generated freezing residual gas". Lessard's only use of the word freezing is at column 7, lines 1 – 6. Lessard, on the other hand, uses a cryopump to generate a high-level vacuum (see Lessard, column 2 lines 38 – 49). The cryopump is vacuum pump that traps gases and vapors by condensing them on a cold surface (see Lessard column 1 lines 13 – 40).

Applicants' claims 1 and 13 recite that residual gas is frozen to generate a high-level vacuum in the chamber. Since Lessard 1) teaches away from the freezing of material, particularly water vapor, and 2) fails to teach, suggest or motivate generating a high-level vacuum by freezing residual gas, Lessard cannot anticipate Applicants' claimed invention as recited in claims 1 and 13.

In view of the above, Applicants submit that claims 1 and 13 are allowable over Lessard, and that claims 2 – 6, 11, 14 – 19, 21 – 23, 25 and 28 are allowable at least because of their dependency on either claim 1 or claim 13.

Claims 13 and 24 were rejected under 35 U.S.C. § 102(b) as being anticipated by Longworth et al. (U.S. 5,687,574). Applicants' claim 13 is directed to a vacuum insulation system. The system comprises a chamber having a substantially-pure gas therein at less than atmospheric pressure, and a cooling element to freeze residual gas in the chamber to generate a high-level vacuum within the chamber. Claim 13 further states that the chamber has essentially no other gasses therein other than the substantially-pure gas. Claim 24 recites that the

substantially-pure gas comprises substantially-pure water vapor having an impurity level of less than 100 parts per million.

Applicants submit that Longsworth does not teach, suggest or motivate the freezing of residual gas in a chamber to generate a vacuum and furthermore submit that Longsworth *teaches away* from use of any sort of gas, particularly water vapor. According to Longsworth, water vapor is undesirable and it is *removed* from the chamber because it freezes on the cold cryopump generating surface. In other words, Longsworth teaches that water vapor can be easily removed from chamber 14 because it freezes on the cold cryopump generating surfaces 44 (see Longsworth column 5, lines 33- 37). The freezing of water vapor is not used to generate a vacuum. Rather, water vapor is frozen *so it can be removed easily*. Accordingly, Applicants submit that claims 13 and 24 are not anticipated by Longsworth.

§103 Rejection of the Claims

Claims 11 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lessard et al. in view of Lorimer (U.S. 5,855,118). Lorimer has been cited to show that high-level vacuums can be generated by cryopumping. Applicants' claim 11, as dependent on claim 1, and Applicants' claim 23, as dependent on claim 13, recite that the high-level vacuum is generated by the freezing of residual gas in a chamber, not by a cryopump. Accordingly, the combination of Lessard and Lorimer does not result in Applicants' claimed invention.

Claim 15 was rejected under 35 USC § 103(a) as being unpatentable over Lessard et al. in view of Muldowney et al. (U.S. 6,257,001). Muldowney has been cited by the Examiner for teaching the use of a roughing pump. Applicants submit that the combination of Muldowney and Lessard does not result in Applicants' invention as recited in claim 15 because the generation of a high-level vacuum by the freezing of residual gas in a chamber is not taught, suggested or motivated by the combination.

Claims 21-22 were rejected under 35 USC § 103(a) as being unpatentable over Lessard in view of Sukenobu (U.S. 4,607,493). Sukenobu has been cited for teaching a superconducting magnet. The Examiner states that Sukenobu teaches that the 'magnet is cooled after freezing the gas'. Applicants respectfully disagree with this interpretation and find no teaching or suggestion in Sukenobu for freezing a gas. Applicants submit that the combination of Sukenobu and Lessard

does not result in Applicants' invention as recited in claims 21 and 22 because the generation of a high-level vacuum by the freezing of residual gas in a chamber is not taught, suggested or motivated by the combination.

Claim 28 was rejected under 35 USC § 103(a) as being unpatentable over Longworth et al. (U.S. 5,687,574) as discussed in relation to claim 13 above, and further in view of Bailey (U.S. 5,551,244). Bailey has been cited for disclosing a JT system for supplying refrigeration power over an extended period for use with the teachings of Longworth as applied to insulating a missile's seeker head. Applicants submit that the combination of Longworth and Bailey does not result in Applicants' invention as recited in claim 28 because the generation of a high-level vacuum by the freezing of residual gas in a chamber is not taught, suggested or motivated by the combination.

In view of the above, Applicants submit that the rejection of claims 11, 15, 21 – 21 and 28 under 35 U.S.C. § 103(a) has been overcome.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicants' attorney at (480) 659-3314 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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By their Representatives,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 16 day of November 2006.

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